REMARKS

No claims have been amended. New claims 31-33 have been added. Claims 1-33 are pending.

The specification has been amended to correct editorial errors.

35 U.S.C. 103

The Examiner has rejected claims 1-8 and 15-24 under 35 U.S.C. 103(a) as being unpatentable over US Patent 6,219,713 (Ruutu et al.) in view of US Patent 5,737,313 (Kolarov et al.). Applicant respectfully submits that the rejection is improper.

Independent Claims 1 and 16-19

The Examiner has admitted that Ruutu et al. do not disclose that the volume value used by the claimed volume value generator is generated based on a difference between a target departure volume and an estimate of arrival volume of data at a queue through which data passes from the transmitter to the receiver. The Examiner, however, has equated the rate the cells are arriving in the queue of Kolarov et al. with the estimated arrival volume recited in claims 1 and 16-19, and has equated the rate the cells are being served from the queue with the target departure volume recited in these claims. Applicant respectfully submits that the claimed subject matter cannot be equated with the indicated subject matter of Kolarov et al. as suggested by the Examiner.

In particular, the target departure volume recited in the claims is not equivalent to, or suggested by the rate the cells are being served from the queue described by Kolarov et al. Target departure volume is not equal to

departure volume. Applicant's specification defines the target departure volume on page 16 at lines 13-19 as the target number of bytes that can be transmitted from the queue in a time interval. The target departure volume is not the number of bytes that is transmitted, but rather the number of bytes that <u>can</u> be transmitted. Applicant's specification describes a way of calculating this value by obtaining the target utilization factor p and the actual service volume C from the queue interface 48 and by producing a calculated current target volume $T(n)$, as the product of the target utilization factor p (e.g. 95%), and the actual service volume C. The actual service volume C corresponds to the actual rate the cells are being served from the queue and thus it can be seen that the target departure volume, while derived from the actual service volume C, is quite different as it incorporates the target utilization factor p. Thus, the claimed target departure volume is not equivalent to the rate the cells are being served from the queue, as suggested by the Examiner. Applicant respectfully submits that there is nothing in the disclosures of Kolarov et al. and Ruutu et al., taken separately or in combination, to suggest that the actual service volume be adjusted by the target utilization factor as described to produce a current target departure volume as recited in claims 1 and 16-19.

In addition, claims 1 and 16-19 recite the use of an <u>estimate of an arrival volume</u>, which the Examiner equates to the rate the cells are arriving in the queue. Applicant respectfully submits that the claimed <u>estimate of arrival volume</u> is not equivalent to the rate the cells are arriving in the queue as described by Kolarov et al.

A description of the <u>estimate of arrival volume</u> is provided on page 16 at lines 4-12 of Applicant's specification, where it is stated that a new current arrival value estimate $M(n)$ is computed as a weighted sum of present and past

arrival volumes, in this embodiment according to the equation $M(n) = \Theta\hat{M}(n-1) + (1-\Theta)\hat{M}(n)$, where Θ is a weighting constant between 0 and 1. Referring to page 9 of Applicant's specification, beginning at line 20, the description provides that the queue interface 48 administers packets into a queue 20 and provides information to the apparatus 38 about the status of the queue 20. Such information could include the total queue capacity Q, the queue occupancy q, the packet arrival volume $\hat{M}$, the target packet departure volume T, the actual service volume C, the target utilization factor p, the upper threshold Th, and the allocated buffer size B, for example. Furthermore, on page 10, at line 2, Applicant's specification states: "The packet arrival volume $\hat{M}$ represents the number of packets 18 admitted to the queue 20 during a current sampling/control interval Δt. Applicant respectfully submits that, in effect, the queue interface measures the current packet arrival volume and it is this measured current packet arrival volume that is weighted and summed to produce the new current arrival volume estimate recited in the claims.

In contrast, in the device of Kolarov et al., an explicit rate value provided in a specific field of a received packet is filtered and used by the IRRS block to compute a new explicit rate. Nowhere is there any disclosure or suggestion by Ruutu et al. or Kolarov et al. that measured packet arrival volume or current arrival volume estimate should be used to produce an estimate of arrival volume, as recited in Applicant's claims. Indeed, Kolarov et al. appear to disclose instead that the control law that determines the common rate for all Available Bit Rate Service Virtual Channels using port "q" at time "t" (col. 6, ln. 3-5) does not require any measure of incoming rate (col. 7, ln. 34-35). Thus, Kolarov et al. teach away from the use of a measured packet arrival volume, which is captured in Applicant's claims as an estimate of arrival volume. In

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view of the above, Applicant respectfully submits that Ruutu et al. and Kolarov et al. fail to disclose or suggest the claimed target departure volume and the claimed estimate of arrival volume and thus Applicant's claims recite a method for adjusting the volume of data communicated between a transmitter and a receiver based on entirely different criteria than Ruutu et al. and Kolarov et al. describe. Applicant respectfully submits that Ruutu et al. and Kolarov et al. provide no motivation to employ the criteria set forth in Applicant's claims and therefore Applicant respectfully submits that the rejection is improper. Claims 1 and 16-19 should be allowable.

Dependent Claims 2-8, and 15

Applicant respectfully submits that the rejection of claims 2-8 and 15 is improper and that these claims should be allowable because of the additional subject matter claimed therein and because of their dependence on claim 1, which should be allowable for the reasons above.

Dependent Claims 20-24

Applicant respectfully submits that the rejection of claims 20-24 is improper and that these claims should be allowable because of the additional subject matter claimed therein and because of their dependence on independent claim 19, which should be allowable for the reasons above.

Dependent Claims 9, 10, 25, and 26

The Examiner has rejected claims 9, 10, 25, and 26 under 35 U.S.C. 103(a) as being unpatentable over Ruutu et al. in view of Kolarov et al. and further in view of the article "Random Early Detection Gateways for Congestion Avoidance" (Floyd et al.). Applicant respectfully submits that the rejection is improper.

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The Examiner has expressed the view that Floyd et al. disclose a system wherein the average length (fullness) of a queue is determined by inspecting the number of arriving packets at the buffer over a time period and refers to sections 6 and 11 in this regard.

Applicant's claims 9 and 25 recite generating network element volume values by time filtering successive arrival volume values to produce a filtered arrival volume value, whereas Floyd et al. describe calculating an average queue size by taking an exponential weighted moving average based on a current queue size and a previously calculated average value. Essentially Applicant's claims deal with arrival volume values whereas Floyd et al. appear to deal with current queue size to produce volume values. Thus the bases upon which volume values are produced are quite different. Floyd et al. describe nothing that would suggest that arrival volume values should be used to produce a filtered arrival volume value and therefore Floyd et al. provide no motivation to employ the claimed arrival volume values in combination with the elements of the intervening dependent claims and the base claims, which have already been shown to distinguish over the art cited by the Examiner. Consequently applicant respectfully submits the rejection of claims 9 and 25 is improper.

Similarly, claims 10 and 26 recite producing a weighted sum of present and past arrival volume values, not present queue size and last-calculated average queue size as disclosed by Floyd et al. Consequently, applicant respectfully submits that the rejection of claims 10 and 26 is improper.

Dependent Claims 11 and 27
The Examiner has rejected claims 11 and 27 under 35 U.S.C. 103(a) as being unpatentable over Ruutu et al. in view of Kolarov et al. and further in view of

Fan et al. (US Patent 6,324,165). Applicant respectfully submits that the rejection is improper.

The Examiner has admitted that Ruutu et al. do not disclose that the volume generator comprises a queue control mechanism that computes a scaling factor to adjust the queue size according to a threshold. However, the Examiner has equated a wanted utilization (U_2) of the queue of Fan et al. with the target utilization factor recited in claims 11 and 27. Applicant respectfully submits that the claimed subject matter cannot be equated with the indicated subject matter of Fan et al. as proposed by the Examiner.

The target utilization factor recited in Applicant's claims is not equivalent to or suggested by the wanted utilization (U_2) of Fan et al. Applicant's specification defines the target utilization factor on page 10 at lines 8-10 as representing a desired ratio of the target packet departure volume and the actual service volume. Target packet departure volume is described on page 10 at lines 4-6 as the target number of packets 18 that can be dispatched from the queue 20 during the current sampling/control interval. Actual service volume is described on page 10 at lines 6-8 as representing the maximum number of packets 18 that can be dispatched from the queue 20 during a sampling/control interval.

Nowhere is there any disclosure or suggestion in the reference of Fan et al. that the wanted utilization U_2 should represent a desired ratio of a target packet departure volume and an actual service volume as recited in Applicant's claims. No definition of wanted utilization U_2 appears to be disclosed by Fan et al. Instead, Fan et al. appear to disclose a value U_0 ($\approx 95\%$), which may be related to the utilization at the nth interval and which appears to be computed as $U(n) = C_T(n)/C$. The value $C_T(n)$ appears to be defined as denoting a count of the number of cells observed at the output of

the OP (output port) during the nth scanning interval. The value C appears to be defined as the number of cell times during one scanning interval (col. 21, ln. 2-12). Cell time appears to be defined as a technology-dependent time for a feedback signal to propagate from an output port to input modules (col. 7, ln. 65-67). Clearly, the wanted utilization U_2 disclosed by Fan et al. is based on parameters other than target packet volume and actual service volume as contemplated by the Applicant and thus is not the same or equivalent to the target utilization factor recited in the claims.

Thus, Fan et al. fail to disclose, fail to suggest, and/or teach away from the use of a target utilization factor as contemplated by the present Applicant. Applicant respectfully submits that Fan et al. provide no motivation to employ the claimed target utilization factor in combination with the elements of the interceding dependent claims and the respective base claims to claims 11 and 27. Consequently, Applicant respectfully submits the rejection of claims 11 and 27 is improper.

Dependent Claims 12, 13, 28 and 29

The Examiner has rejected claims 12, 13, 28 and 29 under 35 U.S.C. 103(a) as being unpatentable over Ruutu et al. in view of Kolarov et al. and further in view of Aweya et al. (US Patent 6,549,517). Applicant respectfully submits that the rejection is improper and that these claims should be allowable because of the additional subject matter claimed therein and because of their dependence on either claim 1 or 19, which have been argued to be allowable above.

Allowable Subject Matter

The Examiner has indicated that claims 14 and 30 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any
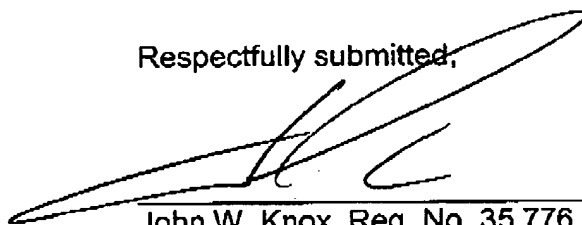
intervening claims. Applicant thanks the Examiner for the indication of allowable subject matter, and has included independent versions of claims 14 and 30 herewith as claims 31 and 32.

In addition, applicant has included additional claim 33 for the Examiner's consideration.

The Office is requested to extract $312.00 from Deposit Account No. 06-0713 for payment of excess claim fees for the three additional independent claims herewith.

Applicant respectfully requests further favorable consideration of the application.

Respectfully submitted,

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